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THE FREQUENCY OF DREAMS

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IS there any dreamless sleep? I venture the assertion that probably all persons dream all the time when they are asleep (and sometimes when they are awake). There is perhaps no dreamless sleep.

Since authorities are about equally divided on this mooted question, it is necessary that a brief summary should be made of the grounds upon which our assertion rests. Such grounds may be seen in four directions: the observation that inability to recall a dream is no proof of the non-existence of the dream, certain theoretical considerations, experimental proof, and spontaneous expression of dreams. Many other lines of evidence might also be brought to bear. The proof must necessarily be inductive, and therefore can be only cumulative; the most that we can prove is a high degree of probability of the truth of the proposition.

The notion that dream-consciousness is not continuous in sleep rests essentially upon the memory test, the feeling that, since we recall dreams only occasionally, we have had only occasional dreams. We must therefore first examine that proof.

Replies to questions as to the frequency of dreams run somewhat like this: "Very much every night"; "Nearly every night"; "A dozen times a month"; "Hardly ever"; "Never." But such reports tell us nothing about the frequency of dreaming, for they refer only to the frequency with which dreams are remembered; and we know now that normally dreams are not remembered. Only the exceptional dream is remembered. If one has had a hundred dreams during the night, he may or may not remember one or more of them. Whether or not a dream shall be remembered depends upon its coherence, the strength of associational ties, the depth of sleep, the habit of recalling dreams, and many other similar conditions. As a rule, dreams are not remembered; mental development and efficiency in waking life are conditioned upon our freedom from the burden of consciousness of the massive apparent chaos of dream life.

We remember only those experiences which are coherent, clear, and rational—experiences that are more or less individualized and have meaning with reference to waking life. The vast mass of dreams are too fragmentary, too fleeting, too much thrust upon us as an undifferentiated jumble—in short, too meaningless to be remembered. Of the dreams which have meaning, we remember only those which are recent,

primary and strong, and stand in striking congruity or incongruity with our dominant feelings. Most of the coherent dreams are wanting in these respects and are only distantly relevant to waking consciousness. Of the relevant and coherent dreams, we recall only those for which situations in waking life chance to occur in such a way as to establish bonds of association that shall extricate them from the mass of unrecognized dream traces. You wake up in the morning after a sound sleep and may not be able to recall any dream; but the moment you stoop to lace your shoe a vivid dream image flashes up and you recall that you dreamed in the night of walking barefooted in the snow. Had there been no awareness of the shoe, this dream of the want of a shoe might not have been remembered. On the whole, there is a slight chance that situations in waking life shall so occur as to elicit the image of a dream which is sufficiently recent.

Even with all other considerations favorable, the ability to remember a dream is conditioned upon the presence of a habit of recalling dreams. The development of such a habit is on the whole undesirable; should a person remember all his dreams, he would lose his mind and be helpless; therefore the principle of natural selection tends to suppress dreams. The writer, like many other students of dreams, has found it advisable to abandon the intensive study of dreams because habits of observing and recalling dreams interfered with normal sleep.

The dreams which we remember come from light or disturbed sleep. The failure to remember dreams is roughly proportional to the depth of sleep. Sleep-walking, *e. g.*, occurs only in deep sleep.

Many apparently fabulous stories of feats in sleep-walking are found true. A college student formed the habit of getting up in sleep, dressing, walking down to the Mississippi River, three quarters of a mile distant, undressing, taking a deliberate and enjoyable swim, dressing, walking back to his room, undressing, and retiring, only to wake up in the morning without the slightest inkling of remembrance from the escapade of the night. But when his friends constituted themselves detectives and awakened him suddenly in the act, the whole performance stood out clear to him in his memory. Sleep-walking is dream-action. If a sleep-walker is allowed to return to bed without being awakened, he will have no memory of the dream action in the morning.

In deep sleep we may do anything we could do in waking life, and even more, for the dreamer may become a distinct second personality, free from some of the limitations of the waking personality. Thus we have in dream action evidences of the most amazing complexity in the deepest undercurrents of mental life, under the very conditions which preclude the possibility of memory of the dream.

In view of such considerations, it is clear that from the negative point of view, arguments for dreamless sleep on the basis of the memory test can have no valid foundation.

Turning then to our theoretical proof, we find a strong argument in the generally recognized correlation of mental activity with certain neural activities. There are many theories of this relationship, but for the present purpose we need not assume that this correlation is complete, nor need we inquire into the nature of the causal relations; the fact that there is an observable correspondence is enough. We know from physiology that no part of the nervous system is ever wholly at rest. With the exception of the eye, all the senses are open in sleep; taste, temperature, and tactual stimuli are often conspicuously present in sleep. It is difficult to conceive of any condition in which this flux of sense impressions, should be absent. All these sense impressions in sleep cause dreams, and the central association mechanism is constantly at work weaving an intricate network of relationships among these impressions thereby giving them meaning, however far-fetched. Indeed, the very closing of the eye as in sleep is conducive to an increased play of visual impressions, for the internal stimulation gives rise to the so-called retinal light, which may be very brilliant, and is always seen in a more or less gorgeous kaleidoscopic motion. It has been well called the stuff that dreams are made of.

Stimuli through ear, nose, skin, muscle, and even the closed eye, affect the mental organism on the same principle as in waking life. Internal stimuli act not only upon the sense organs, but also directly upon the brain and other nerve centers. Pressure caused by the rush of blood, metabolism, and other mechanical stimuli arouse nerve impulses. Probably chemical, thermal and electrical action within the body tissue may stimulate nerve elements directly. Theoretically such centrally aroused nerve impulses have their mental correlates. On the theory of concomitance, we must therefore assume that there is a continuous stream of mental processes which correspond more or less to the continuous activity of the nervous system. In sleep such mental processes are, of course, subliminal: they are dreams.

In short, on the theory of correspondence between certain mental and neural processes, the continuous impressionability of the senses and the constant stimulation within the central system itself point to an uninterrupted dream activity in sleep.

Experimental procedure has brought direct proof which is cumulative and has revealed no exceptions. Proceeding on the assumption that a given sense stimulation will cause a particular dream, Alfred Maury many years ago made experiments of which the following are typical:

First Experiment.—He caused himself to be tickled with a feather on the lips and inside of the nostrils. He dreamed that he was subjected to a horrible punishment. A mask of pitch was applied to his face, and then roughly torn off, taking with it the skin of his lips, nose and face.

Second Experiment.—A pair of tweezers was held at a little distance from his ear, and struck with a pair of scissors. He dreamed that he heard the ringing of bells; this was soon converted into the tocsin and this suggested the days of June, 1848.

Third Experiment.—A bottle of eau de Cologne was held to his nose. He dreamed that he was in a perfumer's shop. This excited visions of the East, and he dreamed that he was in Cairo in the shop of Jean Marie Farina. Many surprising adventures occurred to him there, the details of which were forgotten.

Fourth Experiment.—A burning lucifer match was held close to his nostrils. He dreamed that he was at sea (the wind was blowing in through the window), and that the magazine of the vessel blew up.

Fifth Experiment.—He was slightly pinched on the nape of the neck. He dreamed that a blister was applied, and this recalled the memory of a physician who had treated him in infancy.

Sixth Experiment.—A piece of red-hot iron was held close enough to him to communicate a slight sensation of heat. He dreamed that robbers had got into the house, and were forcing the inmates, by putting their feet to the fire, to reveal where their money was.

Seventh Experiment.—The word Leonore was spoken. On awaking, he recollected this word, and found that he had attributed it to one of the persons who had conversed with him in his dream.

Eighth Experiment.—A drop of water was allowed to fall on his forehead. He dreamed that he was in Italy, that he was very warm, and that he was drinking the wine of Orvieto.

Ninth Experiment.—A light, surrounded with a piece of red paper, was repeatedly placed before his eyes. He dreamed of a tempest and lightning, which suggested the remembrance of a storm he had encountered in the English Channel in going from Merlaix to Havre.

In each of these experiments the dream could be reproduced because the dreamer was awakened in the very act. Had he been allowed to sleep until morning, there would have been but little likelihood of the recalling of the dream. The significant fact is that, allowing for the realism and the dramatic form of the dreams, experimental procedure confirms the theory that every sense impression tends to produce a corresponding dream. And, as we have noted above, the senses are all responsive in sleep, there is no silence, no darkness, no freedom from the impressions of odor, taste, touch, strain or temperature. This continuous stimulation of the senses results in a continuous flux of dream flashes, many of which lead to extended dreams.

The probability of dreams from a given set of stimuli is increased beyond that of analogous situations in waking life by the fact that the dream is not a true representation of the stimulus, as the waking impression is supposed to be. When awake, you may merely note a slight taste of bitter in the mouth; whereas, in the dream, the same condition on the tongue might make you dream of going through some awfully bitter experience, of being poisoned, or of eating some disagreeable substance with distressing consequences.

It is possible to enter into conversation with a sleeping person; and,

if the sleeper is not awakened at the time, he is not likely to remember anything about it. The replies are proof that the apparently dreamless sleeper hears the conversation, understands it, and fits his words to the ideas in mind. It is claimed that talking to a sleeping person is an effective way of instilling ideas which it is desired should work themselves out in the waking state. The method has been employed in the breaking up of bad habits and in the effort to create desirable habits.

Hypnosis may be employed to bring out evidence of dreams from apparently dreamless sleep. If a person wakes up after an apparently dreamless sleep, he may be hypnotized and given the suggestion to recall dreams from that sleep. There is such a kinship between the dream state and the hypnotic state that it is quite possible to conjure up in the latter the experiences of the former. The report of such dreams may be checked and verified, in part at least, by controlling conditions for production of dreams experimentally in the sleep, and then checking up the hypnotic report by these known causes of dreams.

Waking suggestion may be employed, some think, even more effectively. By Freud's method of psychoanalysis the dreamer is put through a sort of sweat-box process, not necessarily unpleasant, in which the inquisitor, by following clues progressively revealed, discovers stimuli which step by step lead to the effective associations that may recall to memory dreams not otherwise recallable.

A most interesting extension of the field of dream interpretation has developed in recent practice of psychoanalysis. If the patient is unable to recall any dream, the physician asks him to invent one, and it is found that such an imaginary dream partakes of the nature of a real dream; *i. e.*, cause and effect may be traced and it may be "interpreted" as if it had been a real dream.

The experimental evidence, then, tends to prove that dreams are caused by natural stimuli as sensations are caused in waking life: given a sense stimulus, we may expect a dream to follow. The fact that a dreamer may carry on a dream conversation, or influence the formation of habits by suggestion in sleep, is proof of highly complex and rationalized activity in sleep, of which the dream carries no trace into waking consciousness. The experiments with hypnotic suggestion and waking suggestion add convincing evidence to the belief that, whenever we have adequate means for the testing of a given moment of sleep, we find it occupied with dreams.

The theoretical conviction thus strengthened by experimental tests is further fortified by close observation of spontaneous expressions of dreams. It is a law of psychology that what is in the mind tends to express itself in appropriate action, even though only inceptive and normally only faint. A skilled observer watching a sleeping person may be able to observe uninterrupted evidence not only of a continuous

stream of dreams, but also of rich complexes of dream conflicts. If this observation be done with the expert skill of a so-called mind reader, most marvelous reports may be drawn from dream-life through the unconscious reactions, especially the rich play of facial expression, which is eloquent language. The observer also "reads" the environment with the same skill and, by associating the continuous flow of sense stimuli with the psychophysical expression, his observations are reduced almost to experimental control.

It may be said that these contentions prove too much in that they prove the presence of dream consciousness in the waking state. That is granted, and it is an important fact. We dream a great deal on the ordinary rounds of duty. One who is trained in psychological observation of dreams will catch himself frequently in moments of dream-consciousness, sometimes infinitesimally short and in the midst of mental application. On opening a Christmas package, *e. g.*, skilful retrospect would probably reveal to him glimpses of himself in childhood scenes and he might notice that in spite of the self-conscious and joyous activity of the moment, a sort of other self, split off from the waking self, joined these momentarily merging flashes from dream-life into continuity. The writer has observed dream flashes in his own mind, even while lecturing before a large audience. More significant, however, is the presence of that broad stream of subconscious impressions which underlies waking consciousness but passes unobserved. These subconscious impressions in waking hours have much in common with dreams.

The theory of dreamless sleep came into vogue at a time when man held a crude and all too simple view of the mind. Experimental psychology has deepened insight and broadened our view of mental life, ever revealing more and more aspects before unobserved. Only a few years ago, it was thought that to have an illusion or an hallucination was of necessity to show mental weakness. Hallucinations and illusions were therefore supposed to be rare objects of curiosity. Now we know that hallucinations and illusions are normal and ever present in all well-regulated mental life. It has been shown that the conditions which cause illusions and hallucinations are as a rule fundamental and essential conditions of normal mental power. The very principle which enables us to see true perspective in one situation leads of necessity to illusion in many other situations. Now, the man who asserts that his friend has been subject to an illusion, as if he himself were exempt, is the man who asserts that he dreams only occasionally. It may be safely maintained that the authorities who defend the theory of dreamless sleep espoused this theory before the recent notable advances in our scientific knowledge in psychology of cognition were made. The more we study dream life in the light of scientific method in psy-

chology, the more the idea of the ever presence of the dream in sleep grows upon us, not as a result of more and more observed cases only, but rather as a logical inference from growing knowledge of the operation of mental law.

The arguments advanced in support of the continuity of dream life imply and lead to certain interpretations of the nature of the dream, which give it a true setting in an evolutionary and naturalistic conception of the mind and give us a deeper insight into the actual richness and significance of dream life.

Conscious memory follows only a very small part of our waking experience. No one can recall more than an infinitesimal part of the images and ideas which flit through his mind in a day. Watch the flow of free association in your own mind for ten seconds. The display of ideas and images in their rough-and-tumble struggle for recognition is so rich and rapid that no one can speak fast enough to name them as they pass upon the arena of consciousness. Such a display goes on in a subliminal way, while consciousness is directed elsewhere. There is in all our conscious life a rich encircling fringe of this free association, but we have acquired some power in keeping this "fleeting show" subliminal because that is conducive to sanity and mental efficiency. A student asked to observe it for the first time tends to perceive but little following, this habit of suppression; but soon he finds himself in the position of one who, at a glance, notices but a few stars and attempts to count them; the more he tries to count, the more the field of vision tends to fill up with the countless.

The more absent-minded we are, the more coherent and prolonged these free associations become. The step from absent-mindedness to light sleep is in the same direction and is no larger than the step from active attention to absent-mindedness. These free associations constitute our dreams. Free from the limitations which operate in waking life, free even from the bounds of waking imagination, free association holds full sway and winged fantasy is at her best. Dream fantasy has moving pictures outdone, for the prevailing dream type is that of the flash-picture or snap-shot, and sleep affords the best condition for richness of setting and rapid change of scene. How little of this rich dream life we actually remember may be realized if we consider that a dream which in the recall may be represented as lasting an hour may be but the conscious elaboration of what in the actual dream was merely an instantaneous flash image.

The theoretical considerations discussed above are also replete with implications in regard to the nature and meaning of dreams. The dreamer is *en rapport* with the environment, for dream consciousness is responsive to the play of the senses, and dream apperception, representing all past experiences, takes in, modifies, interprets and responds

to impressions, weaving them into the web of dream personality. If then it is true that dream life is a part of the same substratum of mental activity that underlies waking consciousness, it follows that the dream impressions and the dream elaboration continually modify mental content just as the subliminal impressions of waking life do, but, except for the operation of the principle of recency, with vastly greater variety of impressions and effectiveness of result.

Experimental procedure in the production and observation of dreams also enriches our concept of dream nature in that it enables us to set crucial tests and observe details which may serve as a basis of generalization. It not only helps to convince us of the continuity, but reveals and confirms the operation of natural law, so that we realize that, although the dream operates in flagrant violation of the principles of time, space, reality, and cause and effect according to the standards of waking consciousness, it nevertheless flows in accordance with natural law in every respect and at every stage. Every dream fantasy—even every dream fragment or flitting image—occurs in accordance with the principle of cause and effect and is a phenomenon in mental nature just as truly as a blade of grass is a phenomenon of organic physical nature. From this point of view the dream is a chaos only in the same sense that the masses of stars are a chaos. Both are organized, the stars a macrocosm, the dream a microcosm.

With the point of view developed, after exclusion of irrelevant evidence and the acceptance of theoretical and experimental evidence in support of the continuity of dream-life, we are prepared to read meaning into the expression of dreams. The fact that our twitchings, inceptive speech movements, and even sleep walking occur as an expression of the dream is insignificant in comparison with the related fact that the dream expresses itself in our waking life. It not only modifies dispositions which result in feelings, attitudes, moods and impulses that characterize our waking consciousness, but often a specific dream determines our opinion, emotion, memory or decision in the same way as if the dream experience had been an actual waking experience. This is quite as true for the dream that is never remembered as for the dream that is recalled, and, as a rule, we are not aware of the source of such influence.